

Master in Artificial Intelligence



Algorithm Selection & Development XVI





Purpose

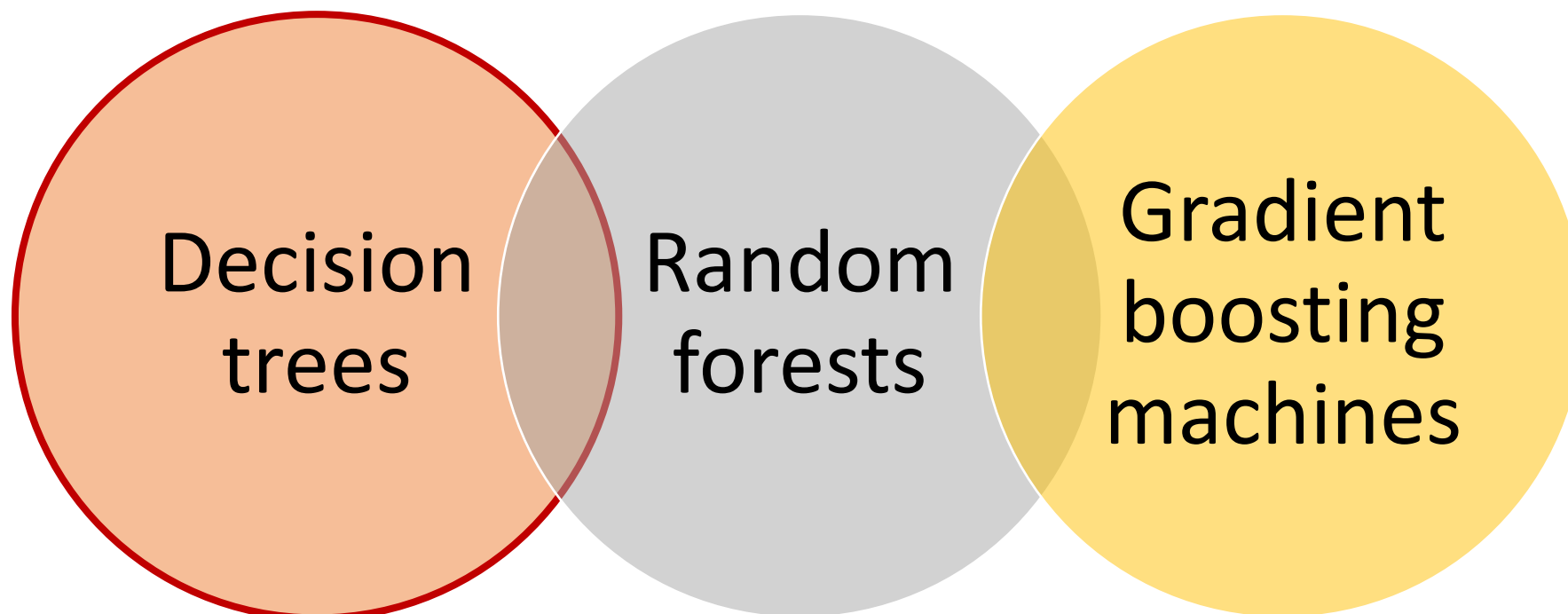
The purpose of the section is to help you learn how to research, select, and develop appropriate algorithms to become a Successful Artificial Intelligence (AI) Engineer

At the end of this lecture, you will learn the following

- **How to train Decision trees algorithm for getting feature importance**



How to train Decision trees algorithm for getting feature importance



A Venn diagram consisting of three overlapping circles. The leftmost circle is orange with a red border and contains the text 'Decision trees'. The middle circle is light gray and contains the text 'Random forests'. The rightmost circle is yellow and contains the text 'Gradient boosting machines'. The circles overlap in a way that the intersection of all three is a darker shade of gray.

Decision
trees

Random
forests

Gradient
boosting
machines



```
from sklearn.datasets import load_iris #  
Sample dataset  
from sklearn.tree import  
DecisionTreeClassifier
```



.. Load Dataset:

```
python
```

```
# Load sample dataset (you can replace it with your own dataset)
data = load_iris()
X = data.data    # Features
y = data.target  # Target variable
```



. Train Decision Tree Model:

python

```
# Initialize decision tree classifier  
clf = DecisionTreeClassifier()  
  
# Fit the model  
clf.fit(X, y)
```



How to train Decision Trees algorithm for getting feature importance-

.. Get Feature Importance Scores:

python

```
# Extract feature importances
feature_importances = clf.feature_importances_

# Print or visualize feature importances
for i, importance in enumerate(feature_importances):
    print(f"Feature {i}: {importance}")
```



How to train Decision Trees algorithm for getting feature importance-

Optional: Visualize Feature Importance:

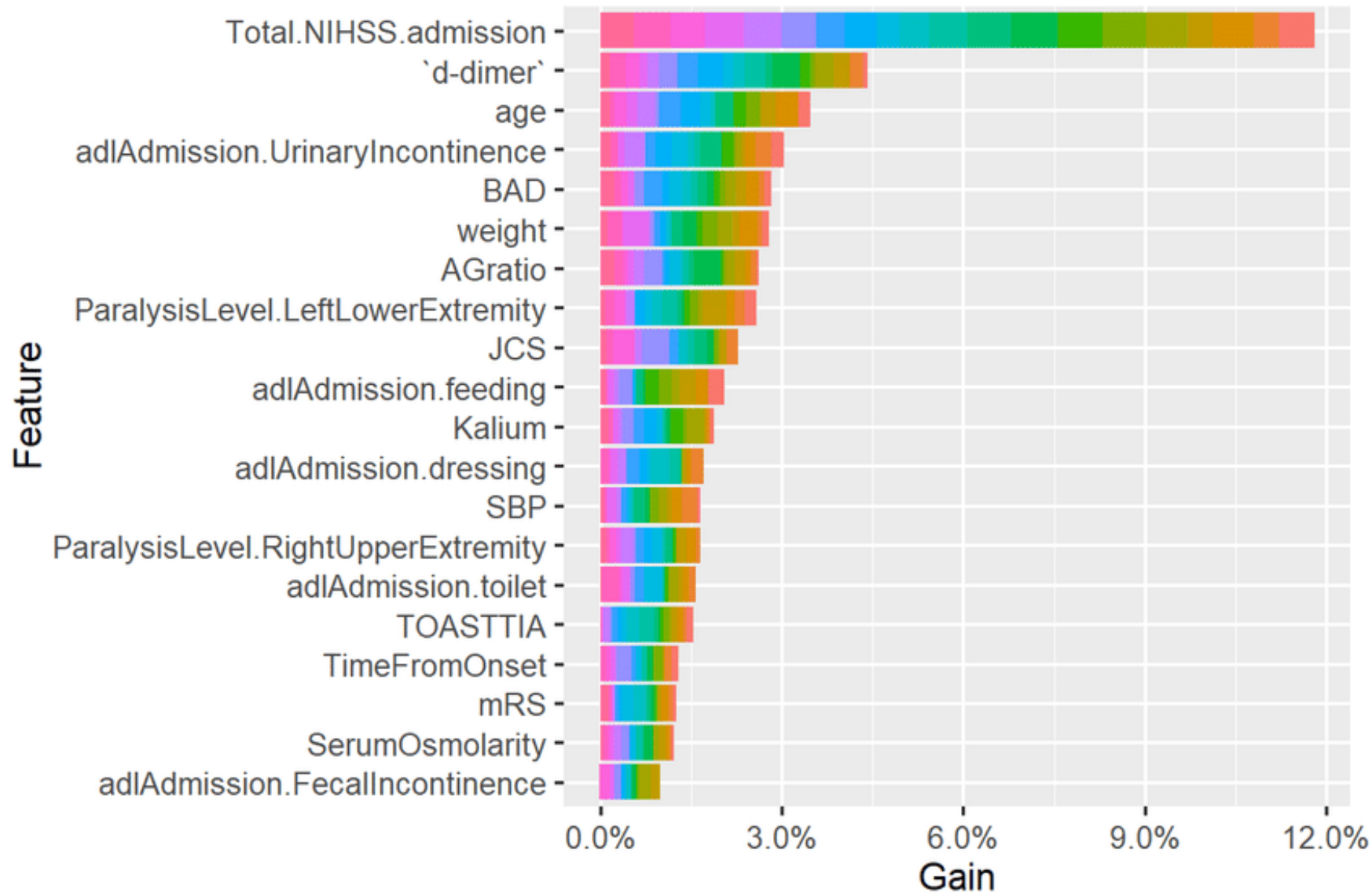
python

```
import matplotlib.pyplot as plt

# Plot feature importances
plt.bar(range(len(feature_importances)), feature_importances)
plt.xlabel('Feature Index')
plt.ylabel('Feature Importance')
plt.title('Decision Tree Feature Importance')
plt.show()
```

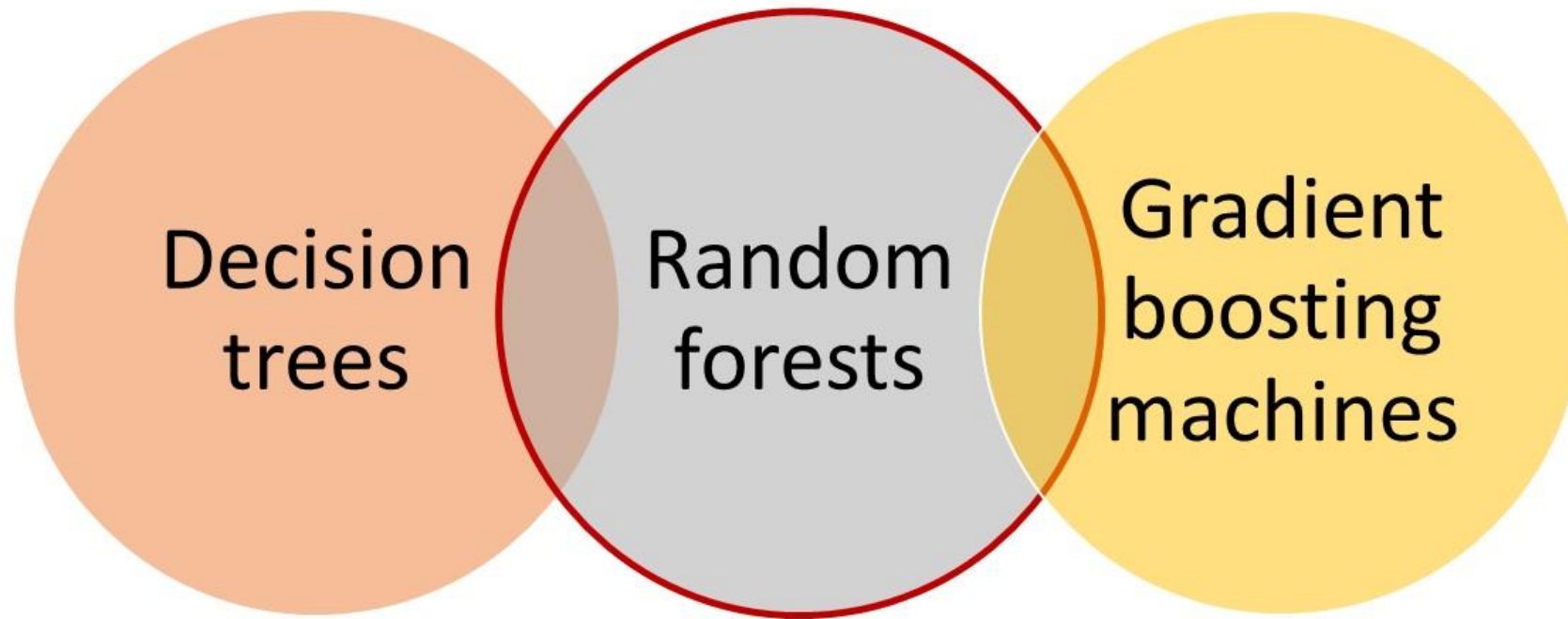


How to train Decision Trees algorithm for getting feature importance-



What is next?

How to train Random Forests algorithm for getting feature importance



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